

Cal Poly Milking Parlor Standard Operating Procedures

A Senior Project

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Caitlyn Lil Morehart

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## **Abstract**

The objective of this project is to develop Standard Operating Procedures (SOP's) for the Cal Poly dairy milk barn, which will help prepare students to be more efficient at milking in the newly renovated milking parlor. A double 10 parallel parlor is to be put into place to update the current milk barn. The current milking parlor is a double 8 herringbone barn which holds eight cows per side that are positioned at an angle. The double 8 herringbone parlor is to be remodeled into a double 10 parallel parlor. In addition, a double 10 parallel barn has ten cows on each side and are being milked between the hind legs. Information was gathered from the Cal Poly dairy's herd manager, Rich Silacci, to develop a new SOP poster for the new milking parlor. Proper milking procedures were discussed and a poster was developed. The poster is to be placed in the milk barn near the pit where students are milking. The SOP poster is to be used as an easy way to answer any questions that they may have about proper milking procedures. The poster that was created contains 6 different steps to insure that students are consistent in their milking procedures. The first step in this SOP poster is to Pre-dip. It is important to apply the Pre-dip to the first five cows, cover the whole bottom 2/3 of each teat and allow the Pre-dip to sit for 30 seconds. Step number 2 calls for stripping the milk from the teats of the five cows and remove 2-3 squirts from each quarter. Step number 3 calls for wiping all five cows teats clean and to use as many towels as needed, but making sure not to transfer dirty towels to the next cow. Step number 4 calls for attaching the milking unit to the five cows and to make sure the milk hose and pulsation hose are parallel with the cows body pointing directly back towards the parlor pit. The milk hose will rest on the hose clamp located on the curb. Step number 5 is when the automatic take-off removes the milking unit when the cow is done being milked. Finally, step number 6



calls for the five cow's four teats to be post-dipped. In addition, the SOP poster will contain extra information such as attending to liner slips, also known as squawking, as soon as possible to decrease chance of mastitis. In addition, it is important to make sure cows are completely milked out to decrease the chance of mastitis. The use of this SOP poster will aid students in learning how to milk the cows properly and provide for their success in the work place.

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## **Introduction**

Developing a consistent milking protocol is important. This project will be conducted at the Cal Poly Dairy in San Luis Obispo, California. The Dairy Science department is the largest in the United States and thrives on their motto “learn by doing.” The Cal Poly Dairy allows the students to learn every aspect of the dairy industry. The milk barn is a big part of helping students to learn about what goes on around the dairy. Milking is a big part of the operation and if the product is not retrieved properly then it could lead to unacceptable milk quality. This standard procedure will be developed to help prepare students to be more efficient at milking.

The Cal Poly Milk Barn is in need of renovation. The demand of increased milk production in the dairy industry challenges the Cal Poly Dairy to be as efficient as possible. In order to improve efficiency, this renovation will change the parlor from a double 8 herringbone to a double 10 parallel with individual milk weight data collection. It is also important to develop SOP's and place a shortened animated procedure on the wall in the milking parlor. This will aid in developing a practical process to train new student employees.



**Figure 1: BECO Flow Nexus view from pit**

Figure 1 (above) is what the new milking system will look like when viewed from the pit. The current milk barn at the Cal Poly Dairy is a double 8 herringbone rapid exit barn. This milk barn is currently inefficient and does not provide a safe learning environment. The rapid exit in the barn is not working and the cows are not comfortable. Furthermore, figure 2 (below) shows what the newly renovated double 10 rapid exit gate will look like. The stalls are currently too small for many of the Holsteins and too big for the Jerseys. The new barn remodel will be a double 10 parallel with more accurate identification (ID) readings to collect individual milk weights. This will allow students to milk faster and be able to observe the cow's identity promptly. This barn will provide the opportunity for more accurate data collection. With this data there will be improvements made to the dairy and the information will also benefit the dairy industry. Protocols will be created to train new students how to properly milk the cow from start to finish. Protocols will then be posted in the milk barn for students to utilize.



**Figure 2: BECO Parallel Rapid Exit Gate**

## **Literature Review**

### **Overview of Milking Procedures**

Milking management is extremely important on the dairy. There must be proper SOP's in place and visible to ensure that workers are doing their job properly and that they can refer to the SOP poster if the herdsman is unavailable. In addition to proper milking procedures, this poster will aid the herdsman and guarantee that the job is performed consistently between employees. Furthermore, it is important to manage how many people will be milking at the same time. In a perfect world, you would be able to milk many cows with a small amount of people. Unfortunately, milking with a small amount of people does not always work and leads to many problems. If you have a large dairy and are forced to have multiple workers, it is important to make sure they can work well together. Some dairymen like to try and cut one worker and double up the work load for others (Bodman, 1986). In many cases this scenario doesn't always work. The milk barn may not get cleaned as thoroughly as it should, and cows may not be milked properly.

### **Time Management**

Milk is produced in cows' alveoli cells and is stored in two different mammary ducts (Jones, 1998). It is important that the physiology of the udder is understood in order to ensure proper milk let down. Cows are very sensitive and repetitive animals that will not let all of their milk down if they are nervous or startled. In addition, it is extremely important that there is a certain amount of time from priming the udder until the machine is attached. Furthermore, the person milking should not take 3-5 minutes to stimulate a cow by stripping or wiping the udder (Jones, 1998). Milk let down will be interrupted if



the person milking is moving too slowly (Jones, 1998). It is also important to not get too far ahead and prepare too many cows in advance. The person milking needs to make sure that they are attaching the machine on the cow within the time constraint of one and a half minutes (Jones, 1998). It is easy to stray away from these time management steps which can lead to the development of mastitis.

### **Pre –dipping**

Pre-dipping dairy cattle before they are milked has become an important part of a milkers' SOP. According to Jones (1998), when the solution is applied, it should stay on the teats for a minimum of 30 seconds. In addition, it is also important that the teats are dry to prevent contamination of the milk. The same teat dip can be used for pre and post-dip depending on the dairyman's preference. Furthermore, Jones also states that it is important to use two different applications when applying a pre and post dip (Jones, 1998). There have been many different studies on the importance of what type of teat dip should be used. These studies are very helpful. However, the milker may not be applying the solution properly and the cows could be dirty leading to the risk of contamination. If the dip is not applied sufficiently and covering the whole teat, the dairymen may not reach their goal of a Somatic Cell Count (SCC) of 200,000 or lower. If iodine teat dips are used, low iodophor concentrations of 0.5% or less should be used since 1% iodophor has resulted in an increase in milk iodine content (Jones, 1998). It is important that the solution contains a skin conditioner of glycerol or lanolin to keep the teats from chapping and becoming infected (Jones, 1998). A study was done at Louisiana State University to test the effectiveness of a gel containing 0.5% iodophor and a glycerol. This test was done by applying the solution for 30 seconds and was dried with a single service paper

towel (Jones, 1998). It showed that compared to washing with water and finishing with an iodine solution, the gel treatment reduced somatic cell counts, bacteria counts, infections, and cases of clinical mastitis (Jones, 1998). In addition, they found that this gel resulted in a shorter prep time allowing the cows to return to their pen more quickly after milking.

### **Stripping**

Stripping the fore milk in the udder is extremely important. This initial amount of milk contains the most bacteria and will allow you to get a more accurate mastitis reading. It is crucial that the milker does not strip and wash the udder simultaneously because this will allow for bacteria to grow and infections to start (Bodman, 1986). This use of stripping is a great way to collect samples and send them to a local lab to get a proper reading on what type of infection cows have so you will be able to treat it. As an alternative to hand stripping, some prefer to machine strip. It is important that machine stripping is kept to a minimum, such as one cow for every 20-25 cows milked (Bodman, 1986). It is also important that you machine strip for only 15-20 seconds (Bodman, 1986). Milking cows is a very important task and should not be taken lightly.

### **Drying**

The process of drying during milking procedures is extremely important to ensure milk quality and udder health. This process is critical to a dairy's mastitis control program. If cows' teats are wet, the teat cups will have a hard time staying attached. For instance, if teat cups are continuously slipping, bacteria and other microorganisms will be able to enter and cause mastitis. Water can be a reservoir for bacteria and can contaminate the mammary system (Stoltenow and Schroeder, 1997). Cloth towels have

become the preferred choice when wiping cows teats dry. They are much easier to use and more cost efficient; however, they require more maintenance and need to be washed before each use. In addition, cloth towels are not to be used on more than one cow. If a cloth towel is used multiple times, the risk of spreading infection between cows increases. It is also important not to fold a towel to be used again (Jones, 1998). These steps are essential to the process of minimizing mastitis cases.

### **Proper machine attachment and removal**

It is important to understand how to attach and remove the claw properly. When attaching the milk machine it is crucial that air is not forced into then milk gland. Furthermore, removal of the milk machine is just as important. It is key that the teat cups are not pulled off just after the vacuum is shut off (Jones, 1998; Bodman, 1986). It is also a good idea to take into consideration that the type of barn and hose location has an effect on milking times. Parallel milking parlors do not take as long to attach and take the machine off of the udder (Gamroth and Khran, 2007). Parallel barns are proving to be more efficient because cows are not able to step on the hoses or rip the machines off as easily (Bodman, 1986). It is also important that all quarters are milked out before removing the machine and waiting for the vacuum to be shut off at the claw (Jones, 1998). In addition, it is important to not pull down on the units or squeeze the udder allowing air in. If air gets into the milk line or teat, it can lead the way to new mastitis infections (DeLaval). It is extremely important to remove the unit after the cow has been milked out. There was a study done at the University of Minnesota to indicate that the condition of the teat end deteriorates when the units remain on the cow for longer than

five minutes (Jones, 1998). It is important to follow these guidelines to ensure proper milk out and to prevent mastitis infections.

### **Post- dipping**

According to the National Council, Post-dipping is necessary when milking dairy cattle to prevent infection from the exposed teat once the cow is back in her pen. The importance of teat dips are to destroy microorganisms present on teats at the end of milking (Jones, 1998). A good solution provides a layer of protection to help the cow to avoid bacterial contamination. Covering the whole teat is especially important if a cow has a lesion on her teat (Jones, 1998). Furthermore, the decision to choose a Post-dip sprayer or dip cup is essential to mastitis control. Sprayers have a tendency to miss the back half of a teat and not provide full coverage. However, a teat dip offers more coverage and protection from contamination. It is important to remember that while teat dipping does help to prevent the initial build up of bacteria and infection, it does not do anything to stop the mastitis infection that is already present. Therefore, it is important to stress proper usage of teat dip as part of milking standard operating procedures.

### **Milking Parlors**

There are many ideas to take into consideration when deciding what milk parlor you want to put onto your farm. The Cal Poly Dairy is transforming their milk barn from a double 8 herringbone to a double 10 parallel. These new features will allow the Cal Poly milk barn to be more efficient and allow for a better learning environment. There are different kinds of parlors to think about when making the final decision such as a New Zealand Parlor, Swing parlor, and low cost parlors (Kammel, 2001). A common type of

barn that is seen in the United States is the New Zealand Parlor. The New Zealand Parlor is a term that describes a parlor such as the herringbone where the cows stand at an angle of 70 degrees (Kammel, 2001). In addition, it is really important to budget for a new parlor. The dairy farmer has to decide how much of an investment they want to make towards their parlor. The rule of thumb is to not spend more than 20% of the milk income (Kammel, 2001). This barn will have a potential savings of 20-30% and has been realized by these farms with a swing line system (Kammel, 2001). There are farmers who find that they need to redo their barn; however, they may not have the financial resources to support their investment. There are many ways that these farmers can cut some corners in the building process to keep costs down. Some of these cuts may be to keep the parlor layout and stall design simple and to use recycled or existing equipment in the new design (Kammel, 2001). It is important to keep costs to a minimum; however, it is necessary to maintain the quality of the equipment. You want to have a barn that is efficient and will allow you to make more money.

### **Parallel vs. Herringbone parlors**

There are different types of milking parlors and it is important to pick the one that best fits the number of cows you have and what you are looking for. In the past, the Herringbone parlor was the most common type of parlor used amongst smaller herds (Reinemann, 2003). In a Herringbone parlor, the cow is only able to expose enough of the back half of herself so the milker can get to her from the side (Reinemann, 2003). Herringbone parlors allow the cows to enter single file and to exit single file. However, there are situations where if there are more than 12 cows on each side there is a rapid exit gate allowing the cows to exit the barn more quickly and efficiently. Furthermore, the

parallel barns allow a larger herd to be more efficient. In a Parallel Parlor, the cows stand side by side at a 90 degree angle (Reinemann, 2003). This angle allows workers to work much quicker when trying to get the cows through the barn efficiently. In addition, the only downfall to the parallel parlors is that sanitation of the four quarters becomes more difficult and it may be harder to attach the milk machine to the four quarters (Reinemann, 2003). Another plus to the parallel parlor is that the stalls are larger to accommodate larger cattle; however, they are not too big for the accommodation of the smaller breeds such as Jerseys (Reinemann, 2003). Most parallel parlors operate by using a rapid exit gate preventing the cows from getting congested when going to the barn.

### **Milk Machine Function**

There are many functions to the milking system. It is important that everything is set up and running properly to insure milk quality and animal health. Some of the most common pressure measurements taken are the milk line and or claw vacuum and the pulsation vacuum (BECO Dairy Automation, INC.). When a dairyman uses a vacuum apparatus in his milk barn to milk his cows, the teat is being constantly stretched or expanded. In addition this action allows the teat to open up and release milk (BECO Dairy Automation, INC.). During the time of milking the cow will be stimulated and she will release oxytocin to release her milk. When a cow lets her milk down, the vacuum pressure inside the liner will allow milk to be extracted (BECO Dairy Automation, INC.). In addition to the positive effects of the vacuum pump there are some negative effects. Over time, the vacuum liner will stretch and contract the teat too frequently and it will cause damage. The constant stretching and contracting action will build up fluid and stop the flow of milk (BECO Dairy Automation, INC.). Furthermore, it is shown that

pulsators are much more efficient when milking cattle. The pulsation allows for the fluids that would be gathered by the vacuum to be pushed back up the teat (BECO Dairy Automation, INC.). The pulsation works more in favor to the cow because the collapsed liner pushes the accumulated fluids back up the teat (BECO Dairy Automation, INC.). In addition to proper vacuum and pulsation levels, it is important to remember not to over milk the cattle. Over milking the cattle can lead to teat end hyperkeratosis. Proper teat end care will allow having longer lasting cattle that produce to their utmost ability.

### **Proper treatment of dairy cattle**

When designing protocols for students, it is important to keep the information as clear as possible. At the Cal Poly dairy, the milkers are all students. Some of the students come from a dairy background and know how to milk; however, there are many who are taking Cal Poly's "learn by doing" approach and gaining a new skill. In addition, some of these students may have never been around cows before and need to learn how to work with them. There are also those students who need a reminder on the proper ways to handle cows. Furthermore, cows are very repetitious animals and if they are startled by humans, it could lead to a lot of trouble on the farm. Like most animals, cows learn which human to trust and which human to not trust (Pajor, Rushen, and De Pasille, 2000). In a study done to test an animal's aversion towards different treatments by humans, they found that the cows who were hit and shouted at were more reluctant to enter the aversion race than the control cows (Pajor, Rushen, and De Pasille, 2000). Students should take this into consideration when milking and handling cows. If they do not, the cows will be afraid, not want to enter the barn and not let down their milk.

## **Importance of SOP's**

SOP's are extremely important in making sure you and your employees are working in a safe environment. In addition, SOP's are crucial to making sure that the animals are being milked properly and every precaution is being taken to ensure milk quality. Furthermore, the Hazard Analysis and Critical Control Points (HACCP) can help to aid in the production of SOP's to fit the needs of the dairy. A proper HACCP can help a dairyman be more successful in the prevention of mastitis and confusion amongst their workers. If proper SOP's are not in place, problems can present themselves such as Mastitis. Mastitis is the inflammation of the mammary gland that is very costly to the dairymen. Mastitis is a never ending infection that can be environmental or contagious. In order for a proper SOP plan to be made there must be some history gathered from the dairy (Noordhuizen and da Silva, 2009). Furthermore, HACCP provides for the control of product quality while aiding in the steps of processing (Noordhuizen and da Silva, 2009). It is said that the HACCP approach is the best approach for a dairy farm (Noordhuizen and da Silva, 2009). It is important because it is geared toward helping farms and it is of minimal cost to the dairyman (Noordhuizen and da Silva, 2009). If more dairies would take on the management practice of setting an SOP and HACCP plan then they would find that they would have fewer complications with management on their dairy and would have more success with their cows.



## **Methods and Procedures**


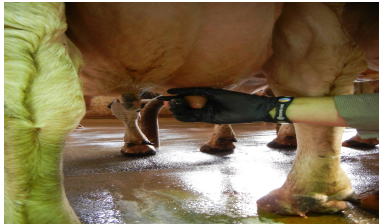
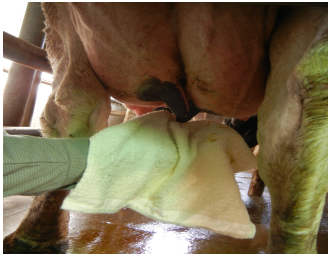



### **Milk Barn Renovation**

The new Cal Poly Dairy barn will be an exciting new advancement to the dairy. The current dairy barn is in need of being updated and repaired. The rapid exit in the milk barn now is not working and it is difficult for the cows to get out of the barn in a timely manner. In addition, there will be a new vacuum pump and more comfortable stalls for any size cow. The new dairy barn is currently not available; however, it is in the process of getting started to be built. In the mean while, contact was made with Brian Medeiros of Medeiros Dairy in Hanford to obtain pictures needed to create the SOP poster that will be placed into the milk barn. Furthermore, on February 20, 2012 a trip was scheduled to Medeiros Dairy in Hanford to take pictures that were placed onto the newly revised SOP poster. Medeiros assisted in picture taking and to obtain quality pictures that will be easy to follow. These pictures were presented to Dr. Stan Henderson and approved to place on the SOP poster.

### **Developing Standard Operating Procedure**

Contact was kept with herdsman Silacci on a regular basis to gather important information regarding the new barn. In addition, frequent contact was kept with Stan Brown. Stan Brown is from BECO Dairy Automation, INC. and is head of the system that is being put in. The meetings with Brown and Silacci helped to acquire the information about the new parlor. Time was spent to learn about how the new barn works and the importance of developing new protocols. It took an extensive amount of time to review proper procedures to develop a strategic plan for the SOP poster. It is important

that these instructions are clear so new students will not have a hard time learning how to milk. Furthermore, it is also important to have proper SOP's in place to insure quality and animal health. It was discussed with Silacci how best to explain proper milking procedures to students help them to be better and more efficient milkers. With the help of Silacci, it was decided that the SOP's poster would be placed in the milk barn in the most visible place possible next to the milking pit.

<p><b>Step 1. Pre-Dip</b></p>  <ul style="list-style-type: none"> <li>• Apply Pre-Dip to the first 5 cows.</li> <li>• Cover the whole bottom 2/3 of each teat.</li> <li>• Allow Pre-dip to sit for 20 seconds</li> </ul>	<p><b>Step 2. Strip</b></p>  <ul style="list-style-type: none"> <li>• For every five cows Remove 2-3 squirts from each quarter.</li> </ul>
<p><b>Step 3. Wipe</b></p>  <ul style="list-style-type: none"> <li>• For every five cows</li> <li>• Wipe clean all four teats.</li> <li>• Use as many towels as needed, but making sure not to transfer dirty towels to the next cow.</li> </ul>	<p><b>Step 4. Attach Milking Unit.</b></p>  <ul style="list-style-type: none"> <li>• For every five cows</li> <li>• Make sure the milk hose and pulsation hose Are parallel with the cows body pointing directly back towards the parlor pit.</li> <li>• Milk hose will rest on hose clamp located on the curb.</li> </ul>
<p><b>Step 5. Machine Take-Off</b></p>  <ul style="list-style-type: none"> <li>• Automatic take-off will remove milking unit when cow is done milking.</li> </ul>	<p><b>Step 6. Post Dip</b></p>  <ul style="list-style-type: none"> <li>• Apply Post Dip to all four quarters.</li> <li>• Making sure to cover the whole bottom 2/3 of each teat.</li> <li>• Check all four quarters for “milk out”. -cow is milked out evenly</li> </ul>

**Figure 3: SOP Poster**

**Developing Training Protocols**

Training protocols are important when training new students. There are many new students that are milking each year and not all of them know how to run the milk barn or even milk cows. These protocols were created to insure that there would be something for students to refer to if they find themselves having trouble. It is important that there is always something available for them so mistakes are avoided.

## Results and Discussion



**Figure 4: Flow Nexus Monitor**

### **New Milk Barn Addition**

The new milking parlor will be an exciting new development at the Cal Poly Dairy. Figure 4 (above) is an example of the new Flow Nexus monitor. The new BECO, Flow Nexus detects problems with milking and the vacuum system. In addition, the new stalls allow up to 12 inches of indexing and will prove to be more efficient and comfortable for the cows. The transformation from a double 8 herringbone to a double 10 parallel with individual milk weight data collection is a new feature that will allow the students to keep more accurate data and assist in future research projects, such as nutrition and reproduction on the cattle, for the Cal Poly Dairy. The addition of the new barn will also help to provide an easy learning environment for the students. The students will find that they are able to learn how to milk the cows in a more efficient and timely manner. The increase in efficiency will reduce labor costs. Furthermore, the addition of the new stalls has allowed for both breeds to be more comfortable as they can fit into them easily. With an increase in cow comfort they will be able to have more efficient milk let down. The

addition of the new rapid exit gate has allowed for more timely release from the barn. There have been many struggles to getting the barn updated. However, the goal will be to have it in place in late spring of 2012 so Cal Poly students and faculty will be able to use it to its full advantage. Furthermore, when preparing the Cal Poly dairy cattle for the new milk barn, it is important to take into consideration that the dairy cattle are repetitious animals and may not readily accept new changes.

### **Addition of Standard Operating Procedure Poster**

It is important that with the addition of the new milking system there would be a SOP poster located near the milking machines. New students will find it easy to reference the SOP poster for the proper milking procedures without having to find the milking manager or herdsman. Furthermore, these students will be able to feel more comfortable when working around the cows and operating the new milk barn with the addition of safety protocols. The Cal Poly Dairy offers a job for all Agriculture majors. It is important that not just the Dairy Science students have the opportunity to work on the dairy. In addition, it is important for anyone willing to have the opportunity to learn how a dairy runs through hands-on experience. Furthermore, these safety protocols have been issued to students before they started working and will be available to them when needed.

## **Conclusion**

The new Cal Poly milking system will open up many opportunities for the Dairy Science department and its students. It is important that systems such as the milk barn are updated routinely in order to maintain cow comfort and milk quality. In addition, it is important that these improvements are made so accurate data can be collected and potentially used to help benefit the dairy industry. The barn will allow more cows to be milked at one time and potentially allow the dairy to save money.

SOP's are crucial when dealing with milking parlors and dairy cattle in order to maintain animal and student safety. Milk quality is also one target of SOP. If the recommended SOP's are not followed, milk quality could be put into jeopardy. The Cal Poly Dairy is a great learning environment and in order to maintain proper procedures there must be a visual aid available for students to reference. These protocols are important on any farm. Students must learn how to properly run the milk barn from start to finish. This project will assist the herdsman in training new employees, maintaining proper milking procedures between employees, and prepare students for potential careers within the dairy industry.

## Appendices

### Starting the Milking Shift

1. Arrive no later than 3:15 a.m. or 3:15 p.m.
2. Clock in
3. Do not bring up first group of cows (jerseys) before 3:45 a.m. or 3:45 p.m.
4. When bringing in a group of cows make sure you hand rake all freestalls!!
5. Machines on by 4:00 a.m. or 4:00 p.m.
6. Remember to write down any cows you see in standing heat, or any cows with some type of health problem in the herdsman office, (limping, foot rot, abscess, pink eye, etc....)

### Setting the Barn Up for Milking

1. Drain all the water from the lines by 1) unscrewing the cap on the milk line next to the receiving tanks (a.k.a. receiver jars) 2) the cap on the line to the right of the filters in the milk tank room and 3) open the valve between the filters.
2. Write down the milk temperature for both tanks, and initialize the paper provided in the milk tank room. The paper is located on a clip board next to the yellow eye wash safety sink.
3. Connect the milk line to the appropriate tank; tank #1 receives first four milkings then the following 3 milkings go into tank#2.

<u>TANK #1</u>	<u>TANK #2</u>	<u>TANK #1</u>	<u>TANK #2</u>
TUE A.M.	THUR. A.M.	FRI P.M	SUN P.M.
TUE P.M.	THUR P.M.	SAT A.M.	MON A.M.
WED A.M.	FRI. A.M.	SAT P.M.	MON P.M.
WED P.M.		SUN A.M.	

4. Make sure that if you are going into an empty tank, that the tank has been washed and completely drained. In addition, make sure the wash switch is in the off position before you start milking.
5. Put the filters on the filter holders using the thick, tan-colored gasket at the bottom. Place the thin black rubber ring near the base of the filter holder where it is grooved, and the black cap on the end. To prevent milk leakage, be sure that the clamps holding the filters are tight.
6. Turn the valve on the air injector line so that it is parallel to the ground.
7. Screw on all the caps that were opened to drain the water from the lines.
8. Turn the switch in the soap room that is located in the milk tank room from “wash” to “milk” then push “stop” on all 16 milking units inside milking parlor.



9. In the machine room (a.k.a. motor room, clocking in room) turn on both switches for the pneumatic gates.
10. Next head down at 3:45 a.m. or p.m. and bring in the 1<sup>st</sup> pen of Jersey cows.
11. This pen is known as pen #1 Jersey
12. Set foot bath gate on MWF and lock up pen #1
13. Then start milking cows.
14. When milking into an empty tank, do not turn on the milk cooler until you have milked at least 2-4 sides of cows (32-48 cows).
15. After milking the first two sides of cows (16 cows) go through and check to see if milk is leaking out of any valves, and that you placed the pipe into the milk tank

## Required Milking Procedures

1. All milkers are required to use latex or nitrile gloves.
2. All milkers are required to keep the barn as clean as possible during milking and after milking has been completed.
3. All milkers are to refrain from any type of outbursts or sudden movements that would offend or endanger their coworkers, visitors, supervisors, faculty, other students, or the cattle.
4. Starting with the first cow on a side and ending with the 10<sup>th</sup> cow proceed to pre-dip all 10 cows. **The pre-dip needs to have time to disinfect teats. Leave the pre-dip on for at least 30 sec.**
5. **After dipping the first 10 cows, go back to the first cow and prime each quarter (4-5 squirts), checking for mastitis and feeling for hard/hot quarters.**
6. Wipe each cow with her own individual paper towel. If the cow is still dirty, feel free to use as many paper towels as necessary to get the udder as clean and dry as possible. **Remember to use a new towel for each cow. Never reuse towels.**
7. Place the milking machine on those 10 cows.
8. **MAKE SURE THAT ALL COWS ARE CLEAN AND DRY, BEFORE PLACING A MILKING MACHINE ON A COW.**
  - **PRE DIP**
  - **PRIME**
  - **WIPE**
  - **ATTATCH**
  - **Post Dip**
9. After placing the milking machine on the cow make sure the milk hose and the pulsation hose is lying parallel to the cows belly and the randall arm (looks like a hook) is holding the hoses properly.
10. **If a machine starts squawking adjust as soon as possible.** The squawking is due to a incomplete seal around the teat. If this occurs, air can inject into the claw and cause milk to be injected back into the teat. This increases the possibility of mastitis.
11. When the machine comes off the cow make sure that she is completely milked out.
12. Before letting the cows go make sure all randall arms that hold the hoses are retracted back and that all cows have been milked out.
13. Apply Post-dip to each teat. **Make sure 2/3<sup>rd</sup>s of the teat is covered in post-dip.**
14. If a cow's milk production seems to be down, she looks sick, or she is in standing heat, write her number down on the whiteboard in the parlor.
15. Hold cow in side alley in the milk barn for herdsman.  
Separate cows that are showing clinical signs of mastitis and put them in the hospital

**ALL MILKERS ARE RESPONSIBLE FOR DISASSEMBLING FILTERS AND TAKING PIPE OUT OF BULK TANK TO INSURE HOSPITAL MILK NEVER ENTERS THE MILK TANK.**

Communication between milker and herdsman is vital!!!

## Cleaning the Barn

1. Shut the vacuum by closing the valve located above the sanitary trap, and release any remaining vacuum in the lines by releasing the little metal flap on the bottom of the sanitary trap.
2. Pump remaining milk from both receivers to the bulk tank, and then place the lid with the three prongs back into the receiver jar, leaving enough room for the hose to fill the receiver jar until the water touches the three prongs and the milk pump starts pumping the milk. (Remember you are not pumping water into the bulk tank, you are pushing the remaining milk in the lines over into the tank).
3. Very important
4. **Go into the milk tank room and take the pipe out of the tank and place inside the wash sink.** Remove the filters and throw them into the trash can back in the milking parlor, do not leave used filters in the trash can in the milk tank room!! Place both tan o-rings, black rings, and the black caps that held the filters in place, into the stainless steel basket that goes into the wash sink.
5. To clean the actual milking units in the parlor start by using hot soapy water. Make sure that all manure is removed. While cleaning the claws, inspect each one for cracked hoses, or worn parts that need to be replaced.
6. Once the claws have been scrubbed with hot soapy water, rinse them, then place them on the jetter cup platform. Make sure the jetter cups are properly secured to milking unit.
7. Remove the ball from the sanitary trap, and turn the valve on the air injector line so that it is horizontal. Place the ball from the sanitary trap in stainless steel basket.
8. Open the vacuum by pulling gently on the vacuum trap valves.
9. Clamp the filter holders back in place, without filters, take old filters and throw them out in large trash bin. Attach the dangling rubber hose between the two filters, and make sure the valve is open.
10. After double-checking to make sure that everything is in place (milk line out of bulk tank, all claws attached to jetter cup platforms, air injector valves are horizontal, vacuum valves pulled out)
11. Turn switch in the soap room from “milk” to “wash” or “red light” to “blue light”
12. Remember to wash down the entire milk tank room, scrubbing the tops of the milk tanks and the steps on the milk tanks. Also remember to wash down the floor of the milk tank room.
13. While scrubbing down the parlor the milking machines will be washing automatically. Make sure that there is water going through all of the claws and none of the hoses have fallen off.
14. Also remember to wash down the large walkway on the east side of the parlor.
15. Before leaving take out all the trash including the trash in the milk tank room.
16. Turn off the radio and every single light in the entire barn.

## **VERY IMPORTANT ISSUES**

- 1 All trash is to be thrown out every day.
- 2 Milkers that end a shift are responsible for leaving paper towel ready for the next shift in the paper towel dispensers.
- 3 Milkers are also responsible for making sure there is enough liquid soap to wash the milk line at all times.
- 4 Milkers milking into a tank for the first time must put soap and acid in the tank washer containers.
- 5 **VACCUM PUMP OIL MUST BE MONITORED AND MAINTAINED BY MILKERS. ALL MILKERS ARE ULTIMATELY RESPONSIBLE FOR THE VACCUM PUMP.**
- 6 Pay close attention when closing gates to corrals so cows do not get mixed up.
- 7 Make sure when you are milking into a tank, that there is enough room in that tank, if not milk into the other tank.
- 8 If you suspect a tank will overflow during milking, double check that tank before it is too late.
- 9 Pay attention to 3 teated cows, (they are noted with a yellow band). Make sure you milk the correct 3 good teats into the milk line.
- 10 Double check all outlet valves after you have milked the first 2 sides of cows so milk does not go down the drain.
- 11 Double and triple check milk temperatures.
- 12 Pay close attention to all cows especially chronic mastitis cows, slow milking cows, deeper uddered cows, (all are flagged with pink tape).
  - **IF THERE IS EVER A COW OUT LOOSE ANYWHERE ON THIS DAIRY FARM DO NOT MILK HER INTO THE MILK TANK!!!!**
  - If you ever see a cow with a thick pink coating on her teats, and/or the letter D on any of her hips **DO NOT MILK INTO MILK TANK, PUT HER IN HOSPITAL.**
- 13 Do not attempt to milk cows while under the influence of drugs or alcohol, doing so will lead to immediate termination.
- 14 All employees will have a personnel file. At the third warning you will be terminated. Examples that lead to termination would be: tardiness, insubordination, fighting with coworkers, excessive use of force on dairy cattle, behaving in an unprofessional manner that would make coworkers or visitors feel uncomfortable and gross negligence.
- 15 **\*\*\* REMEMBER THAT CAL POLY FOUNDATION DAIRY IS HERE TO PROVIDE AN OPTIMAL LEARNING ENVIRONMENT FOR EVERYONE THAT WORKS HERE, ALL CAL POLY AND NON- CAL POLY STUDENTS, BUSINESS PROFESSIONALS, TEACHERS, THE ENTIRE AGRICULTURAL INDUSTRY AND OUR FRIENDLY URBAN NEIGHBORS. PLEASE REMEMBER THIS AS YOU GO ABOUT YOUR EVERYDAY DUTIES AT CAL POLY DAIRY. THIS DAIRY WILL ONLY BE AS GOOD AS THOSE WHO MAKE IT WORK!!!**

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